CLAIMS

1. A process for the production of chloramine comprising supplying a first reagent stream comprising chlorine gas and a second reagent stream comprising ammonia gas to a reaction zone maintained at a temperature of less than 275°C and configured to allow expansion of the first and second reagent streams in the reaction zone to an extent sufficient to generate chloramine as a gas and ammonium chloride as a free falling solid.

2. A process according to claim 1 wherein the reaction zone is configured such that at least about 90% of the generated ammonium chloride is formed at least about 10mm away from any wall of the reaction zone.

3. A process according to claim 1 or claim 2 wherein the reaction zone is bounded towards its top by a reagent supply zone, from which the first and second reagent streams are supplied to the reaction zone.

4. A process according to claim 3 wherein the reaction zone is be bounded towards its bottom by a solids recovery zone, from which solid ammonium chloride may be recovered, or collected.

5. A process according to claim 4 wherein the reaction zone is bounded by side walls (or a continuous side wall) extending between the reagent supply zone region and the product recovery zone.

6. A process according to claim 5 wherein the side wall(s) bounding the reaction zone circumscribe an expansion region into which gaseous chlorine and ammonia from the reagent streams may expand before reacting to form chloramine and ammonium chloride.

7. A process according to claim 6 wherein the expansion region is configured to provide a laminar flow region for the reaction between chlorine and ammonia to take place.

8. A process according to claim 6 wherein the expansion region is of a size sufficient to allow at least 60% of the chlorine gas to react before contacting the side wall(s).

9. A process for the production of chloramine comprising providing a reaction zone maintained under conditions effective for chlorination of ammonia, and at a temperature of less than 275°C, the reaction zone having a laminar flow region for receiving chlorine and ammonia gas supplied thereto.

10. A process according to claim 9 wherein the laminar flow region is bounded by a Reynolds Number of not more than 2000.

11. A chemical reactor suitable for the production of chloramine, the reactor comprising a reagent supply zone above a product recovery zone, and with a reaction zone bounded by side walls (or one continuous side wall) extending between the reagent supply zone and the product recovery zone, the reagent supply zone comprising means for supplying, separately, chlorine gas and ammonia gas to the reaction zone, at least one of the supply means being configured to direct reagent gas into a laminar flow region of the reaction zone.

12. A reactor according to claim 11 constructed and arranged to operate a process according to any one of claims 1 to 10.